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2017 Vintage IONYS_{WF}TM Application Notes for Australia and New Zealand

IONYS_{WF}TM is the result of a common research project between Lallemand and INRA Montpellier, France (*Institut National de la Recherche Agronomique*). The aim of this collaboration was to select a wine yeast better adapted to global warming conditions. The strategy used, called 'adaptive evolution', allows the yeast to progressively adapt to these conditions.

Initially, IONYS_{WF}TM was selected for its ability to overproduce glycerol, hence lower alcohol production. In the yeast cell, and during glycerol synthesis, other intracellular pathways are overexpressed or on the contrary, can be repressed. This is how yeast naturally control their intracellular redox balance. Among the metabolites produced by this metabolism, some organic acids are overproduced such as succinic acid, α -aceto-glutarate, pyruvate and malic acid. During the selection process, the yeast were adapted on a high specific medium which would mimic an osmotic stress to the cells and induce overproduction of glycerol. This adaptation mechanism lead the yeast to develop a specific metabolism towards this specific medium: the result was adapted cells that have the ability to naturally internalise potassium and by doing so, lower its content in the must in fermentation, avoiding precipitation with tartaric acid.

Through this process IONYS_{WF}TM has been selected for the capacity to naturally acidify must during fermentation and to significantly reduce the ethanol produced from grapes with high ethanol potential (maximum 16%); up to 1% less ethanol (sugar carbon is directed to glycerol; rather than consuming 16.8 g of sugar to produce 1% alcohol, IONYS_{WF}TM consumes 17.3 g).

The Intellectual Property (IP) which was used to select IONYS_{WF}TM is protected by an International Patent (Patent pending; N^o WO2015/11411). Propagation of IONYS_{WF}TM is an infringement of this Patent.

Key Fermentation Notes for the Use of IONYS_{WF}TM

- Dose rate
 - It is strongly recommended to use IONYS_{WF}TM at a minimum dose rate of 20 g/hL and to rehydrate the yeast with GoFerm Protect EvolutionTM at a ratio of 1.2 to the ADY rate.
- Fermentation kinetics
 - In our Australian winemaking trials, we have observed a longer lag phase with IONYS_{WF}TM compared to reference *S. cerevisiae*, followed by reliable moderate fermentation kinetics
- Nutrients
 - Well balanced nutrition is of primary importance to the performance of IONYS_{WF}TM during alcoholic fermentation.
 - Recommended nutrition regime;
 - First addition of nutrient (Fermaid O) at the end of the lag phase,
 - Second addition (Fermaid O) around 1/3 sugar depletion (end of exponential growth and the beginning of the stationary phase).

- - Temperature
 - In red ferments it is suggested to maintain ferment temperature in the range 26-28°C for overexpression of glycerol and an optimal decrease in ethanol content.
 - Acidity
 - Changes in wine acidity have been observed with **IONYS_{WF}TM**; Total Acidity (+0.2 to +1.9 g/L) and pH (-0.02 to -0.2).
 - Acetaldehyde
 - As with all yeast there is a spike in acetaldehyde early in fermentation. With **IONYS_{WF}TM** there is a higher than average increase in acetaldehyde, which can be sensorially obvious, however, by the end of fermentation this is naturally reduced to negligible concentrations.

Ongoing Research

In order to fully understand the changes observed in wine acidity, further studies on the role of redox and potassium ions are ongoing.

For further information, please contact your local Lallemand representative



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